

AQUATIC ANIMALS

Where are they?

Use just your eyes at first. Look on the water surface. Are there any animals that can skate around or float directly on the water's surface film? How do you think they stay afloat?

Peer into the water. Can you see any swimmers rising to the surface for a minute, then descending again into the depths? What could they be doing at the surface? Look along submerged sticks and plants. Are there any animals lurking there, perhaps looking like a bit of the plant themselves? What about the mud and soft debris on the bottom? What could animals here find to eat?

Using the Strainer

Drag the strainer through water, along the stems of submerged plants, and in the soft mud at the bottom. Rinse out excess mud by dragging more water through it. Then invert the strainer into a small dish of water for a better view.

Collecting

If you're able to return them to the wetland in a few weeks, you can take some of these animals home to watch for a while. Don't try to bring everything back. Some critters would quickly eat nearly every other animal in your tank! Others simply need more room than you can give them.

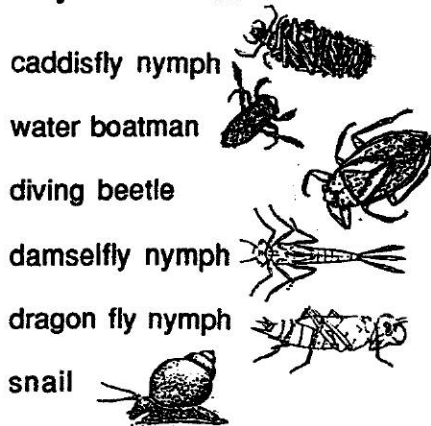
WETLAND STUDY

Things to Do:

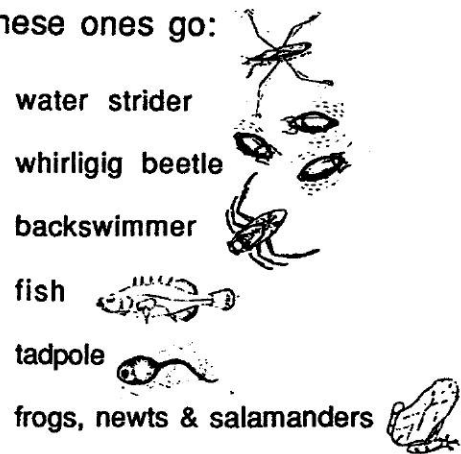
1. Sit quietly for a few minutes and get to know your wetland. You may want to record some impressions of your wetland by writing or drawing.
2. Make a map of your wetland. Record on your map where you are doing your study, including all sampling locations. Describe how the land surrounding the wetland is used.
3. Take a soil sample. Classify your soil using your prepared soil color chart. Record observations on texture, moisture and color.
4. Take the temperature of air, soil, and water. If possible, get a deep water temperature as well. Record temperature in your field notebook.
5. Test the pH of the water with the pH meter in your kit. Record pH in your field notebook.
6. Identify three plants growing in or around the wetland and record this information. Determine whether they are wetland indicator plants using the Washington DNR booklet, Recognizing Wetlands. If you have permission, collect and preserve 1-3 plant specimens using the plant press.

Here's a quick guide to which animals you can collect -- and which to leave there:

These are okay to collect:



Let these ones go:



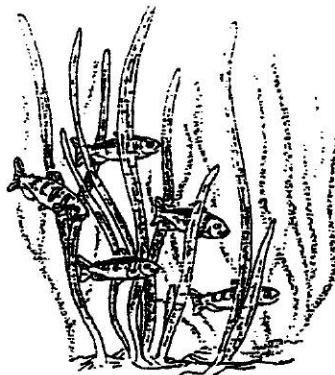
Transport the animals in a pail, in plastic dishes with tight-fitting lids or in the gallon jar itself. Keep the container closed only as long as you need to get the animals home, and take care to keep them cool!

Bring back enough pond water to fill your jar to just below the neck . Collect a few submerged plants so that your aquarium will resemble the environment the animals came from. Be sure to include a few sticks or water plants tall enough to break the surface of the water in your aquarium. These will be important for insect nymphs when it's time for them to emerge from the aquarium and fly away!

7. Look for birds and mammals, or evidence of their presence. Describe any animals you see or any clues you find in your field notebook.

8. Look for aquatic animals on or under the water surface. Describe those you find in your field notebook. If you have permission, collect a small number of selected animals and plants to set up a temporary tank at home.

9. When you leave, look around to make certain you have left the wetland much as you found it.



EXPLORING SOILS

1. Before taking a sample, make a data table in your field notebook like the one below:

Sample Depth	Soil Color #	Hydic Soil?	Texture Moisture	Soil Particles	Other Features or Creatures

2. To take a soil sample, dig a small hole and make a slice from the surface down to about 12 inches. Do you see horizontal layers of different soils? Take a small sample from the surface to examine more closely. Take a second one from about 4 inches down, and a third one from 12 inches deep.

3. Hold each sample behind the holes of your color chart. Move it around until you find the color that nearly matches the main color of the soil. Record the soil number on the data table you made earlier.

WETLAND PLANTS

Strategies for the Soggy Life

Wetland plants have special adaptation that help them survive. Can you find wetland plants with the following characteristics? As you look for them, think about these adaptations might help the plant live where it does. *(The back side of this card will give you some clues.)*

A. A plant growing in the water with a spongy stem or roots full of air?

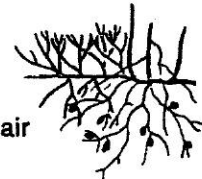
C. A tree with wood that resists rotting?

E. A tall plant with flowers at the very top?



B. A floating plant with tiny air sacs among its stems?

D. A submerged plant with leaves that float on the surface?



Pressing Plants

1. Choose 1-3 plants most common to your wetland to press. Unless the plant is large, take the whole plant. If it's too large, try to include its important parts; roots, leaves, blossoms, etc.

4. On the color chart soil numbers 1,5,7,9,10,13,14,15, and sometimes 2 are usually wetland soils. Numbers 14, 15, and 16 are made mostly of clay and are known as "gleyed" soils. Numbers 4, 8, and 12 may match "rust spots" sometimes found in wetland soils.

5. Feel each sample and describe its texture and dampness. Does it stick together well enough to make a ribbon between your fingers? Record a description on your data table.

6. Describe and record the size and coloring of soil particles.

7. What signs of life do you see in the soil?

Soils questions to ponder:

What part of your soil sample is the oldest? Why do you think this is so?

Did you find any differences between the soil at the surface and deeper down? If so, what are some possible explanations for this?

Did you find anything unnatural (human-made) in the soil sample? If so, how might it have got there?

2. Arrange the plant on a piece of newspaper no larger than the plant press. Cover with a second piece of newspaper and sandwich them between two pieces of blotter paper and/or cardboard. Repeat these layers to add additional specimens.

3. Place the stack between two wooden boards and bind them as tight as you can with the adjustable straps.

4. Set the plant press in a warm, dry place. After a few days, open the press. If the newspapers and blotters are moist, replace with dry paper. Rebind the press.

5. Repeat step 4 if needed. Don't remove the plants until they're completely dry. You can tell they're dry when they won't droop when lifted from the press.

6. When dry, attach plants to heavy stock paper with white glue. Label the paper with the plant's name, the date, the name of the wetland, and where it was growing in relation to the water. Don't forget to include your name as the collector!

Strategies for Survival -(from other side)

A. Spongy stems and roots are a clue the plant can pump air to its roots through the vessels in its stem.

Plant roots need air live like the rest of the plant.

B. Like tiny life-preservers, air sacs hold plants upright in the water.

C. Trees like cedar can live in wet soil where the roots of other trees would rot.

D. Leaves that float on the surface can catch more sunlight than leaves below the surface. Why do plants need sunlight?

E. By keeping their blossoms (and seeds) high, they're not likely to be flooded if the water level rises.

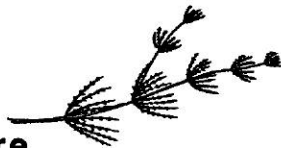
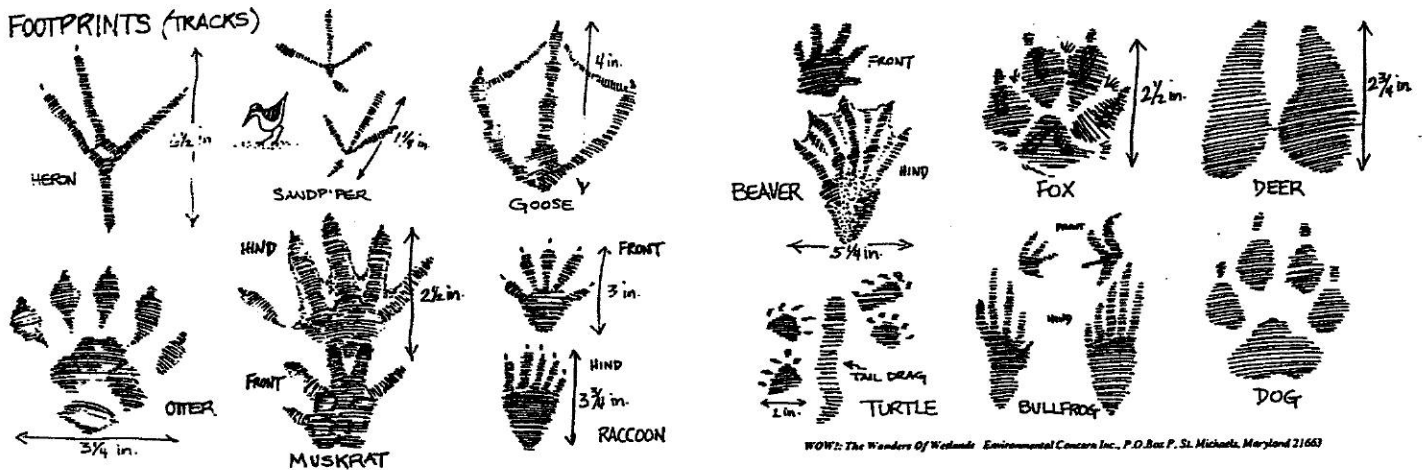
BIRDS AND MAMMALS

Anyone home?

If birds or mammals are present at the wetland while you are there, take some time to watch quietly. Observe and record what you see them doing.

Who's Been Here?

Look for clues left behind by unseen visitors. Have any animals left their tracks in soft mud? Here are some to look for:



WATER QUALITY

Temperature

Take air temperature and water temperature with the kit thermometer. Is the temperature the same in all parts of the wetland? Record these temperatures in your field notebook.

(Can you invent a way to take the temperature of deeper water?)

This chart shows temperature ranges required by certain aquatic organisms.

<u>Temperature</u>	<u>Examples of Life</u>
greater than 68 F (20 C)	Much plant life, fish diseases, bass, crappie, bluegill, carp, cat fish, caddisfly
55-68 F (12.8-20 C)	Some plant life, fish diseases, salmon, trout, stonefly, mayfly, caddisfly
less than 55 F (12.8 C)	Trout, caddisfly, stonefly, and mayfly

Where does your wetland's water temperature fall in this chart?

What are two aquatic animals which could live at the water temperature of your wetland?

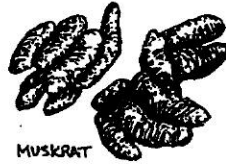
The pH Test

1. Measure pH with the pH tester from your kit. Start by filling both viewing tubes with sample water to the first line.

Look Again

Among other clues to look for are animal droppings, also called scat. If you find some, compare them to the pictures below.

DROPPINGS (SCAT):



(If you're not too squeamish, you might try breaking one open with a stick to find out what the animal was eating!)

Other signs to watch for:



WOW! The Wanderers Of Wetlands Environmental Concern Inc., P.O. Box P, St. Michaels, Maryland 21663

2. Add 6 drops of pH indicator solution into one tube and twirl to mix. This is your prepared sample.
3. Place the tube of prepared sample into the right opening (nearest the center) of the comparator wheel. The other tube (plain water) is placed into the left opening.
4. Hold the comparator up to the light and rotate the wheel until the color most closely matches the prepared sample. The pH value of the sample can then be read through the window.
5. Record the pH reading in your field notebook.

Note: The test for pH uses the chemical phenol red. It is not highly hazardous; however, as in the use of any chemical you should use care in handling it. When you finish the test you may safely wash the waste down a drain that passes into a sewer or septic system. In the field you should collect it in the waste container and bring it back to your house or school for proper disposal.

Aquatic organisms can only live within specific pH ranges. Here are some:

bacteria	1.0-13.0	bass, bluegills	6.5-8.5
algae, plants	6.5-12.0	snails, clams, mussels	7.0-9.0
carp, catfish	6.0-9.0	trout, insect nymphs	6.5-7.5

Which of the above organisms could live in water with the pH of your wetland?

